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REMARKS

Claims 1-23 are pending in the present application. In the Office Action mailed April 20, 2005, the Examiner rejected claims 1-23 under 35 U.S.C. §102(e) as being anticipated by Weyers (USP 6,608,480). Applicant has amended claim 19 to clarify features of the present invention.

With respect to the rejection of claim 1, the Examiner concluded that Weyers teaches "that the volume coil arrangement generates a substantially circular polarized field independent of subject asymmetry." (Emphasis added.) However, Weyers never discusses whether or not the system therein creates such a field that is independent of subject asymmetry. Therefore, since there is no reference to subject asymmetry independence, Weyers cannot be said to teach this element.

In fact, it appears that the system of Weyers does not even suggest a field independent of subject asymmetry. Weyers teaches that "[o]nce a loop is resonant, it is necessary to measure the natural impedance of the loop with and without a load (phantom or body) present." Col. 6, lns. 14-16. Weyers elaborates by noting that "[s]ince the reactance should be very close to zero at resonance, the real component measured in the loop will represent the losses in the coil. It is desirable for this resistance to be much smaller than the resistance when the coil is loaded." Col. 6, lns. 16-20. One of ordinary skill in the art will recognize that considering a difference in the impedance or resistance of a loop as between when a body is present or when a body is not present suggests that the polarized field created by the coil arrangement will differ based upon whether a body is present or not. Thus, it seems the system of Weyers is not equipped to generate "a substantially circular polarized field independent of subject asymmetry," as called for in claim 1. (Emphasis added.) Not only does Weyers fail to explicitly mention the effects a subject may have on a field, Weyers leads one of ordinary skill in the art to infer that the field created by the system therein is actually dependent upon subject asymmetry. Accordingly, Applicant believes that claim 1 is patentably distinct from Weyers and respectfully requests that the rejection of claim 1 and all claims depending therefrom be withdrawn.

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In rejecting claims 2, the Examiner stated that "Weyers further teach (sic) ... a birdcage coil ... having fewer drive cables than the ports." However, Applicant believes that Weyers does not disclose an MR coil assembly "comprising fewer drive cables than drive ports," as called for in claim 2. Weyers discloses eight coils with eight drive ports connected to eight input cables. See Fig. 6; col. 4, lns. 24-38. Nowhere does Weyers indicate that coils could be connected to the same input or drive cable or that coils could operate without such a cable. In fact, Weyers explicitly states that "[t]he phase delay in each loop circumferentially is equal to $360^\circ/N$, where N is the number of coil elements used. When using eight elements, for example, each power splitter 110 output must have a 45° delta with respect to its nearest neighbors." Col. 4, lns. 31-35. (Emphasis added.) In addition, the coils of Weyers are not connected or hard-coupled. As best seen in Fig. 6, each coil is physically independent of its neighboring coils. Thus, each coil must have its own input or drive port. And, each input or drive port is connected to an input cable to conduct the proper phased power signal from the power splitter 110. See Fig. 6. In other words, Weyers teaches only the same number of drive cables as drive ports.

Since Weyers is explicit that the operating coils must be evenly spaced physically and in terms of phase shift, the system of Weyers would not be operable if there "fewer drive cables than drive ports." Therefore, not only does Weyers fail to teach this element, Weyers cannot be said to suggest such an element. As such, Applicant respectfully requests that the rejection of claim 2 be withdrawn.

Referring now to claim 10, the Examiner stated that Weyers discloses all elements of the claim. First, Applicant notes that claim 10 calls for "a substantially circular polarized field about the volume-of-interest independent of subject contact with the RF coil assembly." As discussed above with respect to claim 1, Applicant has already shown that Weyers does not teach a field that is independent of a subject or subject asymmetry. For the same reasons, Weyers does not teach a field that is independent of subject contact.

In addition, the Examiner stated that "Weyers teaches a magnetic resonance imaging apparatus having ... an RF coil assembly [including] ... a plurality of RF coils arranged in a birdcage arrangement." However, the volume coil arrangement of Weyers

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is not a birdcage coil arrangement. A birdcage arrangement, such as that of the present invention, is typically a cylindrical shape with conductive coils spaced about and extending along its length. Further, the coils of a birdcage arrangement are connected or hard coupled to one another. One of ordinary skill in the art would readily recognize that the coil arrangement of Weyers is not a true birdcage arrangement. Each coil of Weyers is independent and not connected. See Fig. 6, col. 3, lns. 42-44 ("The eight independent resonant loops are placed around an equal diameter cylinder and spaced apart from one another.") (Emphasis added). Thus, Weyers employs a transformer network to compensate for the decoupling inherent in disconnected coils. See col. 6, lns. 36-44.

Furthermore, although Weyers may refer to the coil arrangement as a birdcage coil 200, it is apparent that Weyers recognizes the coil 200 is not a real birdcage coil arrangement. First, Weyers indicates that the coil loops are independent and not connected to one another. See col. 3, lns. 42-44. Therefore, Weyers discloses the use of a series of transformers to compensate for the decoupling. See col. 6, lns. 40-49. One skilled in the art would recognize that such a transformer network is not necessary in a true birdcage arrangement. Additionally, Weyers states that the system therein "us[es] eight independent loops to duplicate the transmit field of the birdcage," and later states that it is "critical to duplicate a birdcage transmit field." Col. 4, lns. 24-26; col. 5, 20-23. (Emphasis added.) That is, the coil 200 of Weyers merely mimics the effects of a birdcage coil. Finally, it is notable that Weyers does not claim a birdcage coil, nor does Weyers use the term "birdcage" in any claim. Therefore, it is apparent that Weyers does not teach a birdcage coil arrangement, and a *prima facie* case of unpatentability therefore has not been established. As such, Applicant requests that the rejection of claim 10 and all claims depending therefrom be withdrawn.

In regard to claim 19, Applicant has amended the claim to clarify features of the present invention and believes that it defines over the art of record. Specifically, by making clear that drive ports of the invention are "connected to more than one coil," Applicant has highlighted a distinction between the present invention and the system of Weyers. The system of Weyers requires that exactly one input power line from power splitter 110 be connected to each coil. Col. 4, lns. 29-35. Therefore, as seen in Fig. 6,

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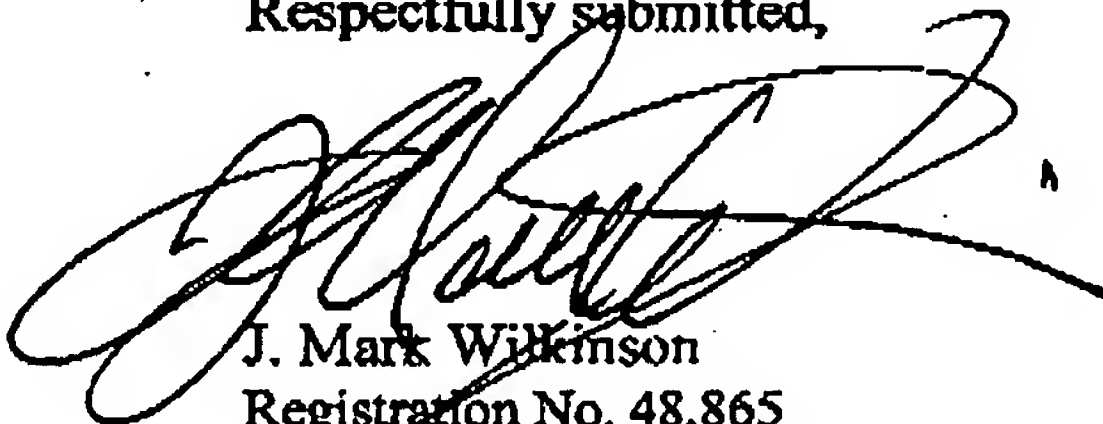
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each coil is connected to only one drive port, and Weyers does not disclose the use of drive ports "connected to more than one coil." Accordingly, claim 19 is patentably distinct from the art of record, and as such, Applicant respectfully requests that the rejection of claim 19 and all claims depending therefrom be withdrawn.

Therefore, in light of at least the foregoing, Applicant respectfully believes that the present application is in condition for allowance. As a result, Applicant respectfully requests timely issuance of a Notice of Allowance for claims 1-23.

Applicant appreciates the Examiner's consideration of the Amendment and Remarks and cordially invites the Examiner to call the undersigned, should the Examiner consider any matters unresolved.

Respectfully submitted,



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